BUTTERFLY OBSERVATIONS ON THE CHAGOS ARCHIPELAGO: A REVIEW AND UPDATE

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Introduction

DURING FEBRUARY and March 1996, the authors surveyed 24 of the 58 islands of the Chagos Archipelago for insects, as members of the 1996 "Friends of the Chagos" international scientific expedition. Details of insects on these islands are few and the survey was carried out partly to provide information for a conservation management plan.

The Chagos Archipelago, British Indian Ocean Territory, is the largest and most isolated coral atoll complex in the world. It contains five island atolls centred at six degrees south, 72 degrees east, in the middle of the Indian Ocean (Edis, 1993). For a detailed description of the archipelago see Foreign and Commonwealth Office (1993).

Five butterfly species have previously been recorded from the Chagos. Three of these were recorded during 1996, including two endemic subspecies, along with another two species that were new to the Chagos. All butterfly species including the specimens in the private collection of Mont Hirons (collected in 1975) were determined by the authors. This account also contains previously unpublished records from Commander J.M.W. Topp, Royal Navy, made during his posting as the British Representative for the British Indian Ocean Territory from March 1984 to March 1986.

Lycanidae

Euchryops cnejus Fabricius

During the 1996 expedition the Gram Blue *E. cnejus*, a species new to the archipelago, was encountered in fairly high numbers on seven of the eight islands visited on the Salomon Atoll: Ile Boddam 9 and 10.ii.1996; Ile du Sel 11.ii.1996; Ile Anglaise 13.ii.1996; Ile Takamaka 14 and 15.ii.1996 and 8 and 9.iii.1996; Ile de la Passe 17.ii.1996 (19 specimens counted on transect) and 10.iii.1996; Ile Jacobin 9.iii.1996; Ile Sepultre 9.iii.1996; in fairly high numbers on five of the seven islands visited on the Peros Banhos Atoll (with an extra record coming from one island not visited by the authors): Ile Diamante 19.ii.1996; Ile Pierre 20.ii.1996; Moresby Islands 22.ii.1996; Ile du Coin 22.ii.1996; Ile Yeye 24.ii.1996; Petite Ile Coquillage 24.ii.1996 (*pers. comm.* Peter Symens); on one of the five islands visited on the Great Chagos Bank Atoll: South Brother 13.iii.1996; and at one site on Diego Garcia (with an extra record coming from a site that was not visited by the authors): incinerator and landfill site 27.ii.1996 and 2.iii.1996; south end of airfield 1996 (*pers. comm.* John Topp).

E. cnejus was observed to lay eggs on *Vigna marina* on Ile Takamaka on 14 and 15.ii.1996. This foodplant was abundant on all of the islands visited where *E. cnejus*

was encountered, except for Diego Garcia. *V. marina* had been introduced to Diego Garcia in 1985 (Topp, 1988) but was not at all common during 1996. *E. cnejus* was observed to lay eggs on *Macroptilium lathryoides* on Diego Garcia. According to Cdr. Topp *M. lathryoides* arrived in Diego Garcia after 1985, it being noted for the first time in February 1993. It was probably brought in with sand and aggregate from Malaysia via Singapore in 1992 (*pers. comm.*). This foodplant was found by the authors to be locally common only at the site where *E. cnejus* was encountered. Cdr. Topp reported both foodplants present at the south end of the runway along with *E. cnejus* during 1996 (*pers. com*).

Nectaring plants included *Scaevola sericea, Stachytarpheta jamaicensis, Turnera ulmifolia* (Ile Boddam), and *Tridax procumbens* (Ile Diamante and Diego Garcia). Natural predators included the large dragonfly *Anax guttatus* which was observed "hawking" for specimens of *E. cnejus* on Ile Yeye.

It is stated by Common and Waterhouse (1982) that *E. cnejus* larvae are attended by various ants including species of *Camponotus*. Ants of this genus were found on several of the islands inhabited by *E. cnejus* (Barnett and Emms, 1996).

A number of "small blue butterflies" were recorded by Cdr. Topp on several islands (Iles Boddam and Anglaise – Salomon Atoll. Iles du Coin, Mapou, Fouquet and Yeye, and Petite Ile de Bois and Moresby Islands – Peros Banhos Atoll) during the period of August 1984 to December 1985 (*pers. comm.* Cdr. Topp). In the authors opinion it is likely that these butterflies were *E. cnejus*.

Petreleae dana de Niceville

Hutson (1981) recorded the Dana Blue *P. dana* in 1971 on Diego Garcia. During the 1996 expedition this species was encountered along the stretch of road from Minni-minni to the Plantation, on Diego Garcia, on 5.iii.1996. Two specimens of *P. dana* were observed, both flying in the semi-shade of a track during the heat of midday. One specimen was observed to "mud-puddle".

Hutson (1981) records adults of this species associated with *Terminalia* and *Morinda*. *Terminalia* species are regarded as foodplants of *P. dana* (*pers. comm.* Chris Samson). Topp (1988) records *T. catappa* as occasional and widespread on Diego Garcia, more frequent in former habitation areas and grown also for ornament in town. *M. citrifolia* is common and widespread on all terrains inland (*pers. comm.* Cdr. Topp).

Nymphalidae

Cynthia cardui Linnaeus

During the 1996 expedition a single individual of this highly migratory species was encountered on Ile Lubine, Egmont Atoll on 16.iii.1996. This constitutes the first record of the Painted Lady for the Chagos Archipelago. None of the long list of foodplants that are associated with this species were found on the islands. It thus appears likely that this was a wandering individual and that there is little chance of *C. cardui* becoming established as a breeding species on the Chagos.

***Junonia villida* Fabricius ssp. *chagoensis* Watkins**

Fletcher (1910) records that during the Percy Sladon Expedition in 1905 the Meadow Argus *J. villida* was "common throughout the whole Chagos group and generally noted as abundant. There are no specimens from Egmont Atoll but it is reported to occur there, although not commonly". It was noted by Fletcher as particularly abundant on Ile de la Passe on 27.v.1905 and 22.vi.1905, and the Percy Sladon collection contains 40 specimens. The previously unpublished collection of Mont Hirons contains four specimens collected from the Great Chagos Bank Atoll: Middle Brother 27.i.1975 (two specimens) and Sea Cow 21.ii.1975 (two specimens).

During the period of May 1984 to March 1986 *J. villida* was encountered on several islands (*pers. comm.* Cdr. Topp). These islands were as follows: Ile Boddam – Salomon Atoll; Petite Ile de Bois, Petite Ile Coquillage, Grand Ile Coquillage and Ile Fouquet – Peros Banhos Atoll; Middle Brother, Danger, Nelson and Sea Cow – Great Chagos Bank Atoll. During the 1996 expedition *J. villida* was encountered in high numbers on two of the eight islands visited on the Salomon Atoll: Ile Takamaka 14 and 15.ii.1996 and 8 and 9.iii.1996; Ile de la Passe 17.ii.1996 (174 specimens counted on transect) and 10.iii.1996; of the seven islands visited by the authors on the Peros Banhos Atoll, only one specimen was encountered on one island: Moresby Islands 22.ii.1996; very high numbers were encountered on all of the islands visited by the authors on the Great Chagos Bank Atoll: Nelson Island 12.iii.1996; South Brother 13.iii.1996; Middle Brother 13 and 14.iii.1996; North Brother 14.iii.1996; Danger Island 15.iii.1996.

Fletcher (1910) reported that *J. villida* was "around the bushes of *Scaevola koenigii* (this is a synonym of *S. sericea*) on which the larvae were found in all stages from newly-hatched to full-fed. The larvae feed on the underside of the leaves, eating away the green cuticle in irregular patches, generally midway between the edge and mid-rib of the leaf. The greenish-grey pupae were found attached to the underside of the mid-rib of a *Scaevola* leaf".

During the 1996 expedition larvae and pupae of *J. villida* were observed in large numbers on all of the islands where this butterfly was found with the exception of Moresby Islands. The only foodplant recorded was *Scaevola sericea*. Topp (1988) states that *S. sericea* is very common indeed throughout the island (Diego Garcia) inland and on the shore where it forms almost impenetrable barriers up to 100 yards deep. He also states that this plant is an early pioneer of sandy shores. The authors found that these statements could also apply to most of the islands of the Chagos. Another species that has been noted as a foodplant for *J. villida* (e.g. Common and Waterhouse, 1982) is *Portulaca oleracea*. Topp (1988) states that this is common and widespread on sandy, poor soils of Diego Garcia, being a constituent of the beach crest vegetation. This plant species is also present on Salomon, Peros Banhos and Great Chagos Bank atolls (*pers. comm.* Cdr. Topp). However *J. villida* was not observed using this foodplant during the 1996 expedition.

Specimens from the Chagos were described as an endemic subspecies: *chagoensis* by Watkins (1925). The staff at the British Museum (Natural History) compared the series collected by the authors during the 1996 expedition with the world-wide

material in their collection. They reported that the Chagos specimens although no more subtly distinct, had much more bold markings on the underside, particularly of the hind wing. On the hind wing upperside the quite well defined black, crescent-shaped mark appeared reasonably diagnostic, as described in Watkins (1925).

Junonia oenone Linnaeus

Bourne (1886) refers to seeing "one individual of *oenone*". According to Hutson (1981) this may refer to the Black Pansy *J. oenone*, widely recorded around the western Indian Ocean. There are no other records from the Chagos.

Junonia spp.

An encounter with an unidentified species of *Junonia* was made on the main island of Diego Garcia on 1st and 2nd September 1985 (*pers. comm.* Cdr. Topp).

Hypolimnus bolina Linnaeus ssp. *euphonoides* Poulton

Fletcher (1910) records the following sightings of the Eggfly *H. bolina* by the Percy Sladon Expedition in 1905: Salomon Atoll: Ile du Sel 24.v.1905 (one flying high); Ile Takamaka 25.v.1905 (two males); Ile de la Passe 27.v.1905 (one seen flying high over the trees) and 22.vi.1905 (common); Ile Anglaise 31.v.1905 (five males, one female, all rather worn, flying on edge of cocos on seaward side of the islet); Ile Boddam 3.vi.1905 (one male and one female); Peros Banhos Atoll: Ile Diamante 19.v.1905 (one male flying high around the tops of cocos); Ile du Coin 6.vi.1905 (abundant); Diego Garcia Atoll: Middle Islet 12.vi.1905 (one male); Egmont Atoll: reported to occur, but not common. The Percy Sladon collection contains 14 males and five females, all from Salomon and Peros Banhos Atolls. Hutson (1981) saw a single male *Hypolimnus* for several days on Diego Garcia in 1971 which may have been *H. bolina* but was thought to be *H. misippus*.

During the 1996 expedition *H. bolina* was encountered in low numbers on three of the eight islands visited on the Salomon Atoll: Ile Anglaise 13.ii.1996 (one male); Ile Takamaka 14 and 15.ii.1996 (three males) and 8 and 9.iii.1996 (two males); Ile de la Passe 17.ii.1996 (four males) and 10.iii.1996 (one male); and in low numbers on three of the five islands visited on the Great Chagos Bank Atoll: South Brother 13.iii.1996 (four males and three females); North Brother 14.iii.1996 (four males and one female); Danger Island 15.iii.1996 (two males and two females and two sex unidentified). The collection from this expedition contains four males and one female.

Fletcher (1910) reported that "the early stages of this butterfly were not met with". During the 1996 expedition this was also the case. Foodplants recorded as present on the Chagos include *P. oleracea* and *Synedrella nodiflora* (Topp, 1988). Topp (1988) records this latter species as occasional on disturbed or cultivated ground mainly in the town area on Diego Garcia. During the 1996 expedition *H. bolina* was observed to nectar on *Intsia bijuga* on Ile Takamaka.

The species was hard to observe because of its habit of flying above the canopy. However, males of *H. bolina* appeared to be highly territorial: On South Brother three males were observed during an extended period as they constantly chased each other away from a patch of shade cast by tall native trees near the beach-line. So aggressive were these males that they even took to the air to attempt to chase away birds (Lesser Noddies) that were using the same patch of trees for nesting.

Fletcher (1910) reported that female specimens of *H. bolina* from the Chagos exactly resembled specimens from Palawan as represented in the national collection. Later Poulton (1924) described specimens from the Chagos as an endemic subspecies: *euphonoides*. The staff at the British Museum compared the Chagos series collected by the authors during the 1996 expedition with the world-wide material in the museums collection. They reported that they were not impressed by the distinctiveness of this taxon, assuming that the localities given for the specimens in their collection were correct. The supposedly distinctive characters given by Poulton (1924) seemed to fall within the range of variation found in populations from other localities.

Junonia villida Fabr. ssp. *chagoensis* Watkins, an endemic subspecies to the Chagos Archipelago that was encountered in very high numbers on the Salomon and Great Chagos Bank Atolls during the 1996 expedition.

***Hypolimnus misippus* Linnaeus**

Bourne (1886) identified *Vanessa "bolini"* from Diego Garcia but Poulton (1924) re-identified his specimen as *H. misippus*. The previously unpublished collection of Mont Hirons contains a single specimen of a female Mimic *H. misippus* captured on Danger Island on 5.iii.1975. This specimen is important as it is the only confirmed recent specimen from the Chagos group. Hutson (1981) saw a single male *Hypolimnus* for several days on Diego Garcia in 1971 which was thought to be have been *H. misippus* but which may have been *H. bolina*.

Foodplants of this species include *P. oleracea* (e.g. Common and Waterhouse, 1982; Fleming, 1983; D'Abrera, 1984; Gay *et al*, 1992) and *Ficus* spp. (*pers. comm.* Chris Samson). Both of these are present on many islands of the Chagos group (Topp, 1988 and *pers. comm.*) including the Great Chagos Bank Atoll and Diego Garcia.

Hypolimnus bolina/misippus

During the period of April 1984 to December 1986 16 records (of 18 individuals – all males) were made of butterflies on the main island of Diego Garcia (*pers. comm.* Cdr. Topp). Although cited as being *H. missipus*, it is the authors' opinion that these records could have been either *H. missipus* or *H. bolina*, as both of these species have males that are very much alike – especially in flight. These butterflies were noted during every month except January and February and were well dispersed around the island.

Other sightings of a butterfly, cited as being *H. missipus*, were made by Cdr. Topp on Petite Ile Coquillage (four males) and Petite Ile de Bois (two males) – Peros Banhos Atoll (4.xii.1985) and Sea Cow – Great Chagos Bank Atoll (4.iii.1986). In the authors' opinion these records were more likely to have been of *H. bolina*, considering this species' present abundance on these atolls.

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The White Admiral *Lagoda camilla* (L.) (Lep.: Nymphalidae) and other unexpected butterflies in north London, Middlesex

A female *Lagoda camilla* L. was captured (and later released) flying high over *Hebe* blossom, beneath trees on 9 July 1997 at the end of our garden which abuts Coppetts Wood Nature Reserve (OS grid ref: 276916). This butterfly has recently been reported as expanding its range (Plant, 1987. *The Butterflies of the London Area.* LNHS). Plant also notes (p. 103) that there are few Middlesex records, from the earliest at Mill Hill in 1874 to a singleton at Finsbury Square in 1940. Herbert (1993. *Butterflies of the London Borough of Barnet: A Provisional Atlas.* Barnet Group, Herts and Middx Wildlife Trust) cites the above records and adds (p. 4) "recorded on Monken Hadley Common in 1950 and 1961)".

Four other butterflies have been seen for the first time in 36 years' residence here. A single male Brimstone *Gonepteryx rhamni* (L.) was taken on 25 May 1997 hovering over variegated ivy. However, this may be only a "wandering male" as noted by Herbert (*op. cit.*, p. 18) as sometimes occurring outside their normal area of distribution. On 18 and 21 July 1997, individual Gatekeeper butterflies *Pyronia tithonus* (L.) were seen on flowers of honeysuckle and golden rod respectively. On 29 July 1997 a rather worn female White-letter Hairstreak *Strymonidia w-album* (Knoch) was found feeding on golden rod. Herbert (*op. cit.*) notes only "one tenuous hold" (Monken Hadley Common) for this species in Barnet, but notes that it was recently recorded in Trent Park [Enfield]. Finally a dead, headless female Purple Hairstreak *Quercusia quercus* L. was found on the garden path on 6 August 1997. We have heard that a colony of this species has been observed above the tops of oak trees in Coppetts Wood in recent years.– K.G.V. Smith and J.M.E. Smith, 70 Hollickwood Avenue, London N12 0LT.